

What is claimed is:

- 1 1. A method for mitigating interference caused by ghost signals generated by an  
2 antenna array system, the method comprising:  
3 determining an effective weight of a ghost signal; and  
4 obtaining a downlink beamforming strategy as a function of the effective weight,  
5 the downlink beamforming strategy for transmitting a downlink signal to a  
6 receiver, wherein the downlink beamforming strategy provides an interference  
7 mitigated region at a location susceptible to interference caused by the ghost  
8 signal.
- 1 2. The method of claim 1, further comprising:  
2 calibrating the antenna array system to determine a non-linear characteristic of the  
3 antenna array system; and  
4 determining the effective weight based on the non-linear characteristic of the  
5 antenna array system.
- 1 3. The method of claim 1, further comprising:  
2 determining a non-linear characteristic of the antenna array system; and  
3 determining the effective weight based on the non-linear characteristic of the  
4 antenna array system.
- 1 4. The method of claim 1, further comprising:  
2 varying the intensity of the interference mitigate region.

- 1 5. The method of claim 1, wherein the ghost signal is at least in part caused by  
2 transmitter intermodulation.
- 1 6. The method of claim 1, wherein the ghost signal affects a channel on which the  
2 downlink signal is transmitted.
- 1 7. The method of claim 1, wherein the downlink signal is transmitted on a first  
2 channel.
- 1 8. The method of claim 7, wherein the ghost signal affects a second channel.
- 1 9. The method of claim 7, wherein the ghost signal further affects the first channel.
- 1 10. The method of claim 9, wherein the first channel is utilized by first remote user  
2 terminal at the location.
- 1 11. The method of claim 10, wherein the first channel is further utilized by a second  
2 remote user terminal at a different location.
- 1 12. A method for mitigating interference caused by ghost signals generated by an  
2 antenna array system, the method comprising:  
3 obtaining a first weight for a first downlink signal;  
4 obtaining a second weight for a second downlink signal;  
5 determining a characteristic of a ghost signal that would result by the interaction  
6 of transmitting the first and second downlink signals; and  
7 adjusting the second weight to mitigate the ghost signal.

1 13. The method of claim 12, further comprising:  
2 calibrating the antenna array system to determine a non-linear characteristic of the  
3 antenna array system; and  
4 determining the characteristic based on the non-linear characteristic of the antenna  
5 array system.

1 14. The method of claim 12, further comprising:  
2 determining a non-linear characteristic of the antenna array system; and  
3 determining the characteristic based on the non-linear characteristic of the antenna  
4 array system.

1 15. The method of claim 12, wherein the ghost signal is at least in part caused by  
2 transmitter intermodulation.

1 16. The method of claim 12, wherein the ghost signal affects a channel on which the  
2 at least one of the first and second downlink signals is transmitted.

1 17. The method of claim 12, wherein the first and second downlink signals occupy  
2 the same channel.

1 18. The method of claim 12, wherein the first and second downlink signals occupy  
2 different channels.

1 19. The method of claim 12, wherein the characteristic is determined in an iterative  
2 manner.

1 20. A method for reducing ghost signal interference caused by a transmitter  
2 employing an antenna array, the method comprising:  
3 determining that transmission of at least a first downlink signal by the transmitter  
4 will produce a ghost signal;  
5 adjusting a downlink weight corresponding to the first downlink signal to mitigate  
6 the ghost signal; and  
7 transmitting the first downlink signal in accordance with the downlink weight.

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1 21. The method of claim 20, wherein the ghost signal is mitigated at a first location  
2 corresponding to a first remote user terminal.

1 22. The method of claim 21, wherein the downlink signal is intended for the first  
2 remote user terminal.

1 23. The method of claim 21, wherein the downlink signal is intended for the first  
2 remote user terminal, and the ghost signal is mitigated at a second location corresponding  
3 to a second remote user terminal.

1 24. The method of claim 23, wherein the transmitter transfers information with the  
2 first and second remote user terminals utilizing the same communication channel.

1 25. The method of claim 24, wherein the first and second remote user terminals are  
2 distinguished by the transmitter by spatial channels.

1 26. The method of claim 23, wherein the transmitter utilizes a first and a second  
2 channel for communicating with the first and the second remote user terminals,  
3 respectively, wherein the first and second channels are distinct from each other.

1 27. The method of claim 26, wherein the first and second channels are adjacent  
2 channels with respect to each other.

1 28. A machine-readable medium having stored thereon a set of instructions, which,  
2 when processed by a machine, cause the machine to perform a method for reducing ghost  
3 signal interference caused by a transmitter employing an antenna array, the method  
4 comprising:

5 determining that transmission of at least a first downlink signal by the transmitter  
6 will produce a ghost signal;  
7 adjusting a downlink weight corresponding to the first downlink signal to mitigate  
8 the ghost signal; and  
9 transmitting the first downlink signal in accordance with the downlink weight.

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1 29. The medium of claim 28, wherein the ghost signal is mitigated at a first location  
2 corresponding to a first remote user terminal.

1 30. The medium of claim 28, wherein the downlink signal is intended for the first  
2 remote user terminal.

1 31. The medium of claim 29, wherein downlink signal is intended for the first remote  
2 user terminal, and the ghost signal is mitigated at a second location corresponding to a  
3 second remote user terminal.

1 32. The medium of claim 31, wherein the transmitter transfers information with the  
2 first and second remote user terminals utilizing the same communication channel.

1 33. The medium of claim 32, wherein the first and second remote user terminals are  
2 distinguished by the transmitter by spatial channels.

1 34. The medium of claim 31, wherein the transmitter utilizes a first and a second  
2 channel for communicating with the first and the second remote user terminals,  
3 respectively, wherein the first and second channels are distinct from each other.

1 35. The medium of claim 34, wherein the first and second channels are adjacent  
2 channels with respect to each other.